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54 **Concealment and access to control panel modules.**

57 A cover (24) for a portion (26) of a control panel module (10) is pivotally attached to an edge of the control panel module (10) and encloses a configuration plug (18) for reprogramming purposes and other items (12,14,16) on the control panel module. A top surface (50) of the cover (24) can be used to support a cord (52) which interconnects a reprogramming device (22) with the configuration plug (18) on the control panel module (10) during a reprogramming operation. A projection (46) is provided on the top surface (50) of the cover (24) to prevent the cord (52) from slipping off of the cover (24) when the reprogramming device (22) is so interconnected.

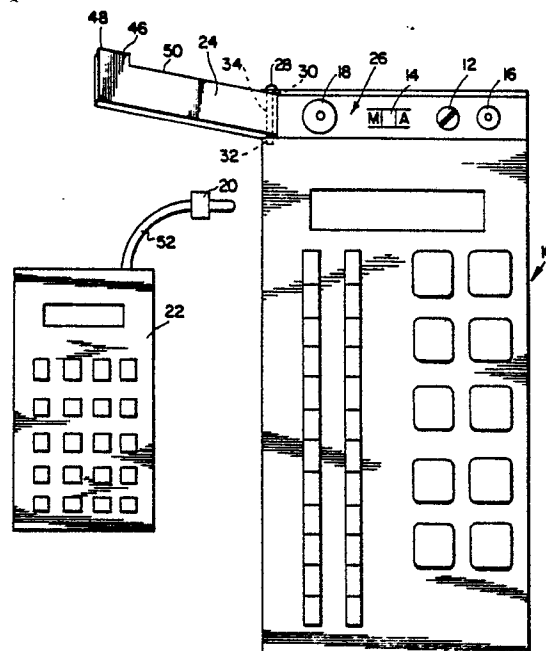


FIG. 1

CONCEALMENT AND ACCESS TO CONTROL PANEL MODULES

This invention relates to apparatus for concealing and permitting access to a portion of a control panel module.

Electronic control panel modules are used in many applications, such as in industrial process control. Typically, these control panel modules have control functions which require periodic reprogramming. These control functions may be located externally on the control panel module, internally within the module, or a combination of external and internal locations might be present on the module. If the control functions are located externally on the control panel module, the module might present a cluttered appearance and there might be confusion between primary and secondary functions shown thereon. In addition, there is always the possibility of accidental tripping of the exposed functions. In contrast, if the functions are located internally within the control panel module, the possibility of electric shock is always present when the module is opened for reprogramming purposes. In addition, when the module is opened, internal components within the module can be easily damaged. And, lastly, when the functions are located internally within the control panel module, there might be a problem in locating the function that requires reprogramming and the time required to locate the function might be excessive.

According to the present invention there is provided apparatus for concealing and permitting access to a portion of the control panel module, the apparatus comprising a cover member pivotally attached to the control panel module and having a first position in which the cover member encloses the portion of the control panel module and a second position in which the cover member permits access to the portion of the control panel module, the cover member including means for supporting a member which is interconnected or interconnectable to the control panel module and means for preventing the interconnected member from becoming disengaged from the supporting means.

A preferred embodiment of the invention described hereinbelow solves the above-mentioned problems associated with the prior art in that it provides a cover for a configuration plug mounted to the exterior of the control module and used for reprogramming the control panel module. The cover conceals the configuration plug when in a closed position. Also, when in an open position, the cover supports a cord attached to a reprogramming device. In more detail, in the preferred embodiment, the cover, when in the closed position, covers or encloses the configuration plug and other items

(including switches) on the control panel module, and, when in the open condition, supports the cord attached to the reprogramming device. The cover is pivotally attached at one end to an edge of the module and its outside surface can be marked so as to identify the module. A projection is provided on the top surface of the cover at the other end of the cover. The projection is shaped so that a front surface thereof coincides with a front edge of the cover and a rear edge thereof is higher than a top surface of the cover and a top of the control panel module. In this manner, the rear edge of the projection acts as a finger engaging means so that the cover can be pivoted outwardly to expose the configuration plug and the other items. In addition, the top surface of the cover can be used to support the cord which is connected to the reprogramming device. In this manner, the cord is supported during the reprogramming process and the projection prevents the cord from slipping off of the top surface of the cover.

The invention will now be further described, by way of illustrative and non-limiting example, with reference to the accompanying drawings, in which:

Figure 1 is a front elevational view of a control panel module provided with apparatus embodying the present invention for concealing and permitting access to a portion of the module; and

Figure 2 is a partial front elevational view illustrating another arrangement for attaching a cover of the apparatus to the control panel module.

Figure 1 is a front elevational view of a control panel module 10 which can be readily installed in a mounting bracket (not shown). The control panel module 10 can include a module mounting screw 12, a manual/automatic switch 14, a reset button 16 and a configuration plug 18. A mating plug 20 is attached to a reprogramming device 22 that is used for reprogramming the control panel module 10 and is interconnectable with the configuration plug 18. In this manner, the control panel module can be reprogrammed in order to compensate for changed conditions. For example, if the control panel module 10 is a programmable controller, set points of the controller can be recalibrated by operation of the reprogramming device 22.

A cover 24, for concealing an area of the module 10 shown generally by the numeral 26, is shaped so as to enclose the module mounting screw 12, the manual/automatic switch 14, the reset button 16 and the configuration plug 18. The front surface of the cover 24 can be marked so as to identify the control panel module 10. The cover 24 is pivotally attached to an edge of the control panel module 10 through the use of a pin 28 which

is received through oppositely disposed apertures 30 and 32 in the module 10 and a sleeve 34 which is formed in the end of the cover 24. It should be noted that the sleeve 34 may be replaced by an upper boss 36 and a lower boss 38 with apertures 40 and 42 respectively therein, as shown in Figure 2. Alternatively, the control panel module 10 might have a complementary boss with an aperture there-through (not shown) which is interposed between the upper boss 36 and the lower boss 38 to form a hinge arrangement. The same pin 28 could be used in any of the foregoing attachment configurations.

As previously stated, the cover 24 has a configuration complementary to that of area 26 so as to enclose the area 26 when the cover is closed. Generally, the cover 24 has a rectangular configuration and a projection 46 is provided on the top edge of the cover opposite the pivoted end. The projection 46 is shaped such that its front surface coincides with the front edge of the cover 24 and its rear edge 48 is higher than the top surfaces of the cover 24 and the control panel module 10. In this manner, the rear edge 48 of the projection 46 can act as a finger engaging means so that the cover 24 can be pivoted outwardly and inwardly about the pin 28 so as to expose or enclose the configuration plug 18, the manual/automatic switch 14, the module mounting screw 12 and the reset button 16. In addition, the top surface 50 of the cover 24 can be utilised to support a cord 52 which connects the configuration plug 18 to the mating plug 20 on the reprogramming device 22. When the top surface 50 is used for such support, the projection 46 prevents the cord 52 from slipping off of the cover 24. Thus, the cover 24 is designed so as to support the cord 52 and prevent its slipping off of its supporting top surface 50 during the reprogramming process.

From the foregoing, it is apparent that the above-described module overcomes the problems associated with externally located control functions since it presents an uncluttered appearance and] there is no confusion between primary and secondary functions. In addition since the cover 24 covers the configuration plug 18, there is no possibility of accidental tripping of exposed functions. Also, the problems associated with internally located control functions are overcome since the interior of the module is never exposed and thus there is no possibility of electric shock and the internal components cannot be damaged. In addition, since the configuration plug is readily available, there is no problem in reprogramming the module and the time required to accomplish reprogramming is minimised. Thus, in summary, the above-described module offers numerous advantages such as a functional appearance, ease of reprogramming,

safety from accidental tripping of the functions, safety from electric shock and protection from internal module entry. In addition, it provides the advantage of supporting the cord 52 for the reprogramming device 22 when it is connected to the configuration plug 18 on the control panel module 10. Furthermore, it prevents the cord 52 from slipping off of the cover 24 when the reprogramming device 22 is so interconnected.

Claims

1. Apparatus for concealing and permitting access to a portion (26) of the control panel module (10), the apparatus comprising a cover member (24) pivotally attached to the control panel module (10) and having a first position in which the cover member encloses the portion (26) of the control panel module (10) and a second position in which the cover member (24) permits access to the portion (26) of the control panel module (10), the cover member including means (50) for supporting a member (52) which is interconnected or interconnectable to the control panel module (10) and means (46) for preventing the interconnected member (52) from becoming disengaged from the supporting means (50).

2. Apparatus according to claim 1, wherein an end of the cover member (24) is pivotally attached to an edge of the control panel module (10).

3. Apparatus according to claim 1, wherein the supporting means (50) is a top surface cover of the cover member (24).

4. Apparatus according to claim 2, wherein the preventing means (46) comprises a projection on the cover member (24), the projection being located adjacent an end of the cover member oppositely disposed from the end of the cover member that is pivotally attached to the module (10).

5. Apparatus according to claim 4, wherein the projection (46) is attached to a top surface (50) of the cover member (24) and has a front surface that coincides with a front edge of the cover member (24) and a rear edge (48) that is disposed from a rear edge surface of the cover member (24).

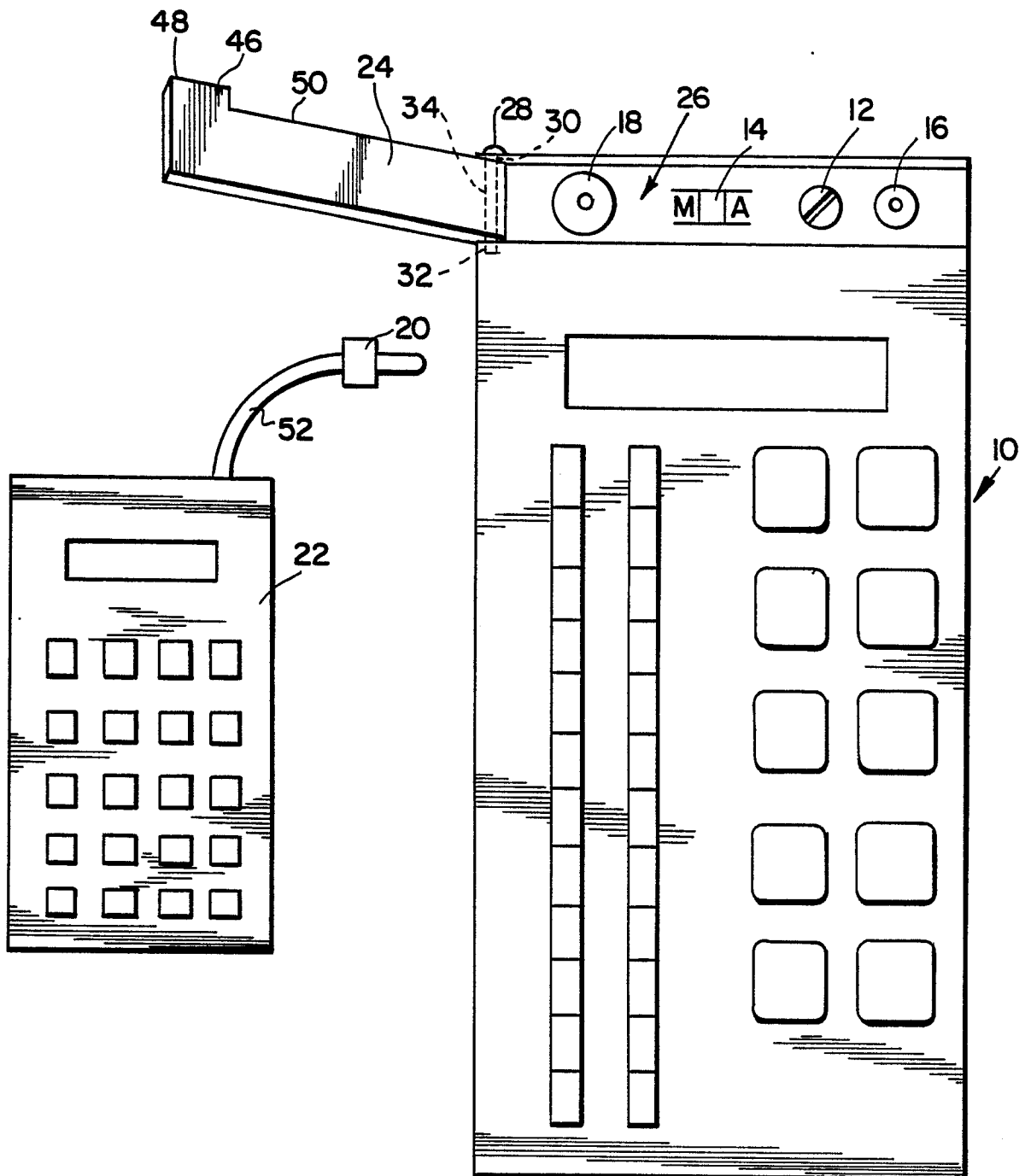


FIG. 1

FIG. 2

